USER'S MANUAL

HERCULES

20-5007-00 (110V)
20-5010-00 (220V)

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WELLS JOHNSON

GENERAL DESCRIPTION

The Hercules™ is a high-powered suction system with three oil-less piston vacuum pumps. The system is designed to pull a vacuum on any closed container or any open process system. Vacuum is accomplished by mounting the vacuum pumps in parallel.

When the system is connected, the air flow will come from the tip of the cannula through the tubing, collection system, overflow trap, bacterial filter and finally to the pumps evacuate the air from the lines, creating a vacuum pulling aspirated material in the same direction as the air flow. Aspirated material continues to the collection system under normal suction until the cannula is exposed to air again.

SPECIFICATIONS

Item number	20-5007-00 (110V)
	20-5010-00 (220V)
Weight	73 lbs.
Dimensions	18-1/2" x 18" x 15"
Configuration	Mobile
Maximum vacuum	29+ inches of Hg
Maximum flow rate	6.8 cubic feet per minute
	850 mL/min. (with specified tubing)
Gauge Unit	Inches Hg/kilopascals
Overflow protection	auto cutoff and in-line filter
Sound level	53+/- 3db @ 6 ft.
Pump Type	2 cylinder piston
Number of pumps	3
Horsepower	1 hp

CHECK LIST

Carefully unpack the Hercules™. Check that the following accessories are included in the package and were received in good condition.

- Hercules™
- Canister Holder
- Vacuum Gauge
- Power Cord
- Foot Switch
- 1-box Sterile, Single-Use, Disposable Tubing (10 per box)
- 2-Bacterial Filters
- 1-Overflow Trap
- 1-box of Disposable, Single-Use Canister Liners (10 per box)
- User's Manual
- DVD

Note: You will receive either 1 or 2 canisters, depending on which collection system you ordered.

Baxter™ System……...1 Canister

Sorenson™ System ……2 Canisters

Quick Fit™ System……...1 Canister

Call Customer Service Immediately to report any damaged or missing items: 800-528-1597

COMPONENT DESCRIPTION

Vacuum Pumps

The Hercules™ uses three (3) 1/3 hp piston pumps

- Oil-less, non-lubricated piston and cylinder
- Permanently lubricated ball bearings
- Stainless steel valves
- Light weight aluminum components
- Long-life, high performance piston seals
- Twin fan cooling system
- UL recognized motors
- Thermal protected
- Balanced for low vibration operation
- Capacitor

Circuit Breaker

To protect the equipment and reduce shock hazard, a re-settable circuit breaker is installed on the **right side**, near the power cord outlet.
If there is a voltage surge or the pump motor overheats, the circuit breaker will pop out.
To reset, turn the Hercules™ off, push in the circuit breaker, and turn the Hercules™ on.
If the unit fails to start, the Hercules™ may require a cool-down period or technical repairs.

Warning: Do not let technicians by-pass the circuit breaker.

CONTROL VALVES

Vacuum Control

Operate Vacuum Control by turning pointer between **High** and **Low** (pressure is reduced). The vacuum gauge on the panel will indicate a pressure change.

Note: The Hercules™ system has been calibrated at 2,500 feet above sea level to 26+ in. Hg. For each additional increase of 1,000', the vacuum should drop by 1" Hg. And conversely, for each additional decrease of 1,000', the vacuum should increase 1"Hg.

Volume Control

Operate the Volume Control by turning the pointer between **High** and **Low** (reducing the amount or volume of flow). Air flow is decreased.

Note: Do not position both the Vacuum and Volume Control valves in the LOW position at the same time, as there will be no noticeable suction.

Foot Switch

The Hercules™ can be operated with or without a foot switch.

OPERATION **WITH** FOOT SWITCH

Plug the foot switch cord into the unit. Turn the Foot Switch and **Power** switches to the **ON** position. Press the pedal and the Hercules™ will start. Press the pedal again to stop the power of the unit.

OPERATION **WITHOUT** FOOT SWITCH

Turn the **Power** toggle switch to the **ON** position,

leaving the toggle for the Foot Switch **OFF**.

Note: The Power switch must be in the ON position before the unit will start.

OVERFLOW TRAP

The Overflow Trap is designed to catch aspirated material which has by-passed, or overflowed, from the main collection canister. The fluid entering the trap will cause the ball inside the plastic jar to float up into the bell shaped tube, which will cause the vacuum to stop.

Note: The plastic ball acts as a preventative mechanism only.

There is NO GUARANTEE that the ball will completely stop the power of the unit.

If there is a problem with the overflow, please check the following:

1. The liner may be collapsing, causing material to overflow into the trap.
2. The collection system may be full.
3. The collection system may not be set up properly.

NO ASPIRATED MATERIAL SHOULD BE ENTERING THE OVERFLOW TRAP AT ANYTIME.

Read the trouble shooting section of this material
for instructions to correct an overflow situation.

SAFETY INFORMATION

Precautions:

- Read all instructions carefully before operating equipment.
- Motors are thermally protected and will automatically restart when protector resets.
- Current leakage tests are performed and are certified within the AAMI maximum 300uA limit for medical devices.

Cautions:

- Avoid ingesting aspirated material into the pumps. Severe damage can occur to the pumping system upon contact with aspirated material.
- Federal Law restricts this device to sale by or on the order of a physician

Warnings:

- Always disconnect the power supply to the Hercules™ before servicing.
- Safety checks should be scheduled according to purchaser's policies.
- Additional warnings and power requirements, which are part of the labeling, are located on the right side of the Hercules™.

SET UP AND OPERATION

1. Carefully remove the Hercules™ from the shipping carton. Be sure to save the box and packing material for convenient maintenance returns.
2. Read all instructions carefully before operating the unit.
3. After you have removed the Hercules™, open the accessory box and locate the power cord and foot switch. Plug the foot switch into the Hercules™. Plug the power cord into the Hercules™, then into the power outlet.
4. Locate the vacuum gauge and connect the item to the quick-connect lock on top of the Hercules™.
5. Turn the Power switch and the Foot Switch ON.
6. To test the unit, place a finger over the main suction hose coming directly out of the top of the Hercules™. Note the reading of the vacuum gauge. Keep in mind that vacuum changes according to elevation. After checking the vacuum, turn the Hercules™ off.
7. Place the Overflow Trap between the 4 small metal pegs on the top panel of the Hercules™. The arrow on the top of the overflow trap should point toward the vacuum gauge.
8. Connect the HEPA Filter to one end of the Overflow Trap using the 6" silicon tube. Connect the other end of the HEPA Filter to the main suction hose.
   Note: Change the HEPA Filter after 10 procedures or every 24hrs of use.
9. Locate the Collection System. Determine if the system is a Baxter™, Sorenson™ or Quick Fit™ canister system, then read the applicable instructions included in this manual to set up the collection system.

Set up the collection system as described.

At this point, the following accessories should now be connected:

- Power cord and foot switch
- Vacuum gauge – to quick connect
- Bacterial filter – connected to the main suction hose and the 6" silicone tubing which is connected to the overflow trap
- Canister – placed in the canister holder with liner intact

The unit is now ready for operation.

BAXTER™ CANISTER SYSTEM SET-UP & OPERATION

1. Place canister on top panel of Hercules™ inside canister holder.
2. Snap the red liner lid onto a soft-shell liner. Insert the hard-shell canister.
   Warning: Baxter liners and lids are single-use and not intended to be re-used under any circumstances to prevent cross-contamination.
3. Plug the red hose on the canister into the top of the liner lid on the port marked **Vacuum**.
4. Attach the 9" piece of silicon tubing from the overflow trap to the red spout on the side of the canister.
5. The sterile aspiration tubing will connect to the port labeled: **Patient**
   Warning: Aspiration tubing is sterile, single-use and not intended to be re-used under any circumstances to prevent cross-contamination.

THE CANISTER SYSTEM IS NOW READY FOR OPERATION.

Caution: Aspirated material should not enter the overflow trap at any time.

If an overflow situation occurs, please do the following:

1. Turn off the power immediately.
2. Check the connections between accessories to make sure the unit was set up correctly.
3. Check for a crack in the canister.
4. Check the vacuum and volume settings (should be on high).

Baxter™

A collapsing liner bag or Aspirated material going into the overflow trap does not mean that something is wrong with the Hercules™.
An overflow situation indicates there is an interference with the liner bag vacuum.

SORENSON™ CANISTER SYSTEM SET-UP AND OPERATION

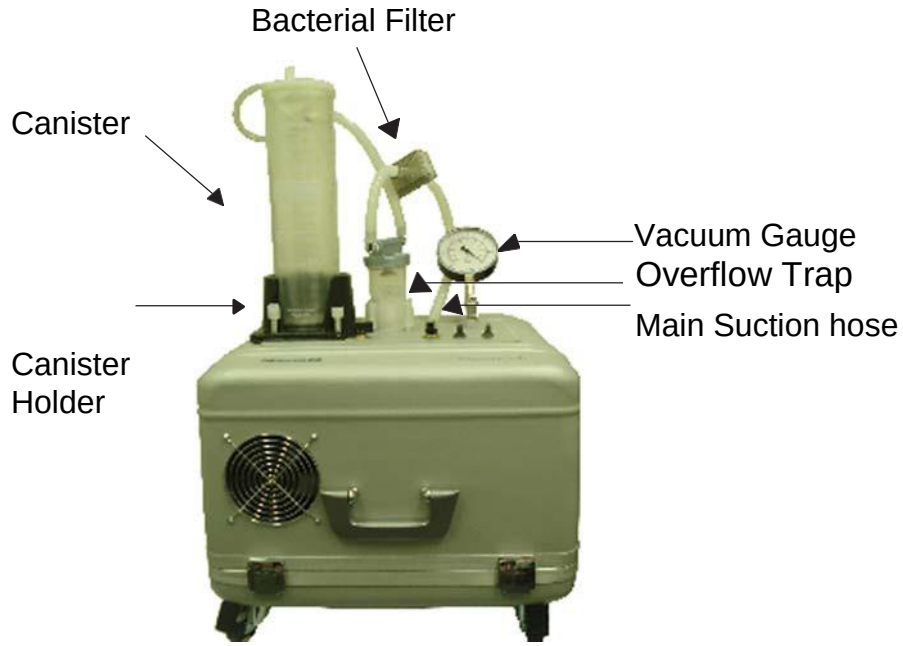
1. Place canister on top panel of the Hercules™ inside canister holder.
2. Insert Sorenson™ liner into the canister and secure the lid.
   Warning: Sorenson™ liners are single-use and not intended to be re-used under any circumstances to prevent cross-contamination
3. Connect the piece of tubing that is connected to the liner lid to one end of the Tee connector.
4. Connect the 12" piece of silicon tubing from the overflow trap to the bottom of the bracket on the Canister.
5. The sterile aspiration tubing will connect to the liner lid on the port labeled: **Patient**
   Warning: Aspiration tubing is sterile, single-use and not intended to be re-sterilized under any circumstances to prevent cross-contamination

THE CANISTER SYSTEM IS NOW READY FOR OPERATION.

Caution: Aspirated material should not enter the overflow trap at any time.

If an overflow situation occurs, please do the following:

a. Turn off the power immediately.
b. Check the connections between accessories to make sure the unit was set up correctly.
c. Check for a crack in the canister.
d. Check the vacuum and volume settings (should be on high).



Sorenson™

A collapsing liner bag or Aspirated material going into the overflow trap does not mean that something is wrong with the Hercules™.
An overflow situation indicates there is an interference with the liner bag vacuum.

QUICK FIT™ CANISTER SYSTEM SET-UP & OPERATION

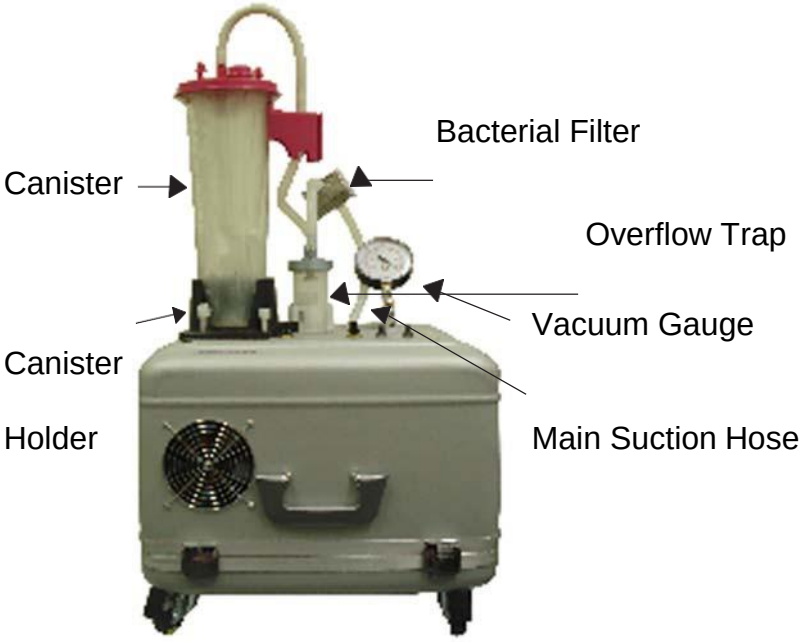
1. Place canister on top panel of the Hercules™ inside canister holder.
2. Insert a Quick Fit™ liner into the canister and secure the lid.
   Warning: Quick-Fit™ liners are single-use and not intended to be re-used under any circumstances to prevent cross-contamination
3. Connect the piece of tubing that is connected to the bracket to the top of the lid. (as shown on picture)
4. Connect the 12" piece of silicon tubing from the overflow trap to the bottom of the bracket on the Canister.
5. The sterile aspiration tubing will connect to the liner lid on the port labeled: **Patient**
   Warning: Aspiration tubing is sterile, single-use and not intended to be re-used sterilized under any circumstances

THE CANISTER SYSTEM IS NOW READY FOR OPERATION.

Caution: Aspirated material should not enter the overflow trap at any time.

If an overflow situation occurs, please do the following:

1. Turn off the power immediately.
2. Check the connections between accessories to make sure the unit was set up correctly.
3. Check for a crack in the canister.
4. Check the vacuum and volume settings (should be on high).



Quick Fit™

A collapsing liner bag or Aspirated material going into the overflow trap does not mean that something is wrong with the Hercules™.
An overflow situation indicates there is an interference with the liner bag vacuum.

MAINTENANCE

- All Aspirators are thoroughly checked by the Quality Assurance Department before being released for shipping. Inspect the unit upon receipt to insure the equipment was not damaged during shipping. The vacuum power should also be checked.
- Do not lubricate pumps. The oil-less components are sealed and packed with optimum level of lubricant, requiring no lubrication.
- Do not let liquid or aspirated material enter the pumping system.
- The mufflers (Part No. 16-5073) should be changed after approximately 80 hours of operation, or whenever the white filter inside the muffler becomes black.
- No scheduled maintenance is recommended. Follow the procedures established by your engineering department.
- Warnings are part of the labeling and are indicated on the Hercules™. The serial number is stamped on a small metal tag, located on the left side of the Aspirator. Record the serial number.
- In-services on new equipment can be provided by telephone with either your sales representative, or our technical support staff. If additional information is needed, call Customer Service or Technical Support at 800-528-1597.

  Change HEPA Filter after 10 procedures or 24hours of use.

PARTS LIST:

ITEM	PART NO.
Hercules™ (110V)	20-5007-00
Hercules™ (220V)	20-5010-00
Power Cord (AC 110V)	20-5100-00
Power Cord (AC 220V)	20-5101-00
Vacuum Pump (1/3hp, piston, hi-flo, 2 each)	18-5057-01
Vacuum Pump (1/3hp, piston, hi-vac, 1 each)	18-5058-01
Internal Tubing Kit	17-5003-00
Mufflers (3 each)	16-5073-00
Footswitch (Single)	20-5102-00
Footswitch (Dual)	20-5103-00
Vacuum Gauge	16-5030-00
HEPA Filters (case of 10)	20-5201-00
Overflow Trap Complete Assembly	17-5100-00
Overflow Trap 6” Silicone Tubing	17-5101-00
Overflow Trap 9” Silicone Tubing	17-5106-00
Overflow Trap Ball	16-5107-00
Baxter™ Holder	20-5159-01
Baxter™ Canister 1500cc	20-5153-00
Baxter™ Disposable, Single-Use Liners 1500cc	20-5154-00
Standard Tubing, 9ft., sterile, single-use	24-5103-00
Flex B Tubing, 12ft., sterile, single-use	24-5102-02
Sorenson™ Holder	20-5159-00
Sorenson™ Canister 1900cc	20-5157-00
Sorenson™ Disposable, Single-Use Liners 1900cc	20-5158-00
MB Tubing, 9ft., sterile, single-use	24-5104-00
Flex A Tubing, 12 ft., sterile, single-use	24-5102-01
Quickfit™ Holder	20-5159-03
Quickfit™ Canister 3000cc	20-5156-00
Quickfit™ Disposable, Single-Use Liners 3000cc	20-5155-00
MB Ultra Limp, 9 ft., sterile, single-use	24-5104-00
Flex A Tubing, 12ft., sterile, single-use	24-5102-01

TROUBLE SHOOTING

No Suction

1. Turn vacuum and volume control knobs to High. If one or both knobs are on Low, there will be no noticeable suction.
2. Check for a collapsing liner.
3. Remove bacterial filter and place a finger over the main suction hose. If there is no suction, turn the unit off, remove finger from hose, wait a moment, then turn the unit on again.

   Note: Before starting any suction procedure, let the Hercules™ go to full vacuum when switched on. During operation, if the Hercules™ is momentarily turned off, let the vacuum gauge indicator return to "0" before restarting the machine. All the air must clear from the vacuum lines before all the pumps will start again. Failure to follow this procedure can result in the loss of vacuum.

Overflow Situation

1. Monitor the collection system for fluid level. Do not overflow.
2. A collapsing liner can cause the aspirated material to overflow into the overflow trap.
3. Check for a crack in the canister. This can cause the liner to collapse, resulting in an overflow situation. A collapsing liner bag does not mean that there is something wrong with the Hercules™.

   Note: With proper operation and monitoring, at no time during any procedure, should an overflow situation occur.

Broken Canister

1. Do not use a damaged canister. A damaged canister will cause the liner bag to collapse, causing the aspirated material to overflow into the overflow trap.

WARNING

Ingesting aspirated material into the pumping system can severely damage the pumps and void the warranty. If material is going into the overflow trap, check the collection system immediately to see if the liner bag is collapsing or is too full. If further assistance is needed, call technical support at 800-528-1597.

Refer to the collection system section and instructions for proper set up.

WARRANTY

- Five (5) year on parts and labor from the date of shipment.
- Unauthorized handling of the Hercules™ will void warranty of the unit.
- Any aspirated material found to have been ingested into the pumping system will void the warranty.
- Retain the custom-made packing box with foam for returns.
- All returns require prior authorization from the Wells Johnson Quality Assurance Department.
- For questions about the warranty, call the Quality Assurance Dept: 800-528-1597

For technical assistance call
Customer Service or Technical Support:
520-298-6069
800-528-1597

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